

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-14 (Canceled)

15. (Original) An apparatus for producing discontinuous lengths of filament, comprising:

a rotatable first roll having a first severing structure;

a rotatable second roll having a second severing structure, the second severing structure corresponding with the first severing structure for severing a length of the filament positioned between the rolls;

a drive system operable to independently rotate and radially position the first roll and the second roll according to a first roll drive command, a second roll drive command, and a roll spacing drive command;

a sensor system operable to receive positional inputs representative of an actual current rotational position of the first roll, an actual current rotational position of the second roll, and an actual current radial spacing between the first roll and the second roll, the sensor system further operative to generate a first roll current rotational position state signal, a second roll current rotational position state signal, and a current radial spacing state signal corresponding to the positional inputs; and

a control system operable to receive the first roll current rotational position state signal, the second roll current rotational position state signal, and the current radial spacing state signal and generate the first roll drive command, the second roll drive command, and the spacing drive command, wherein the control system synchronizes the positioning of the first severing structure and second severing structure during rotation of the first roll and the second roll.

Claims 16-20 (Canceled)

21. (New) The apparatus of claim 15, wherein the first severing structure comprises a plurality of slots spaced apart about a perimeter of the first roll, and the second severing structure comprises a plurality of elongated structures extending from and spaced apart about a perimeter of the second roll.

22. (New) The apparatus of claim 21, wherein the plurality of slots extend longitudinally along the perimeter of the first roll and the plurality of elongated structures include a plurality of cutting blades extending longitudinally along the perimeter of the second roll.

23. (New) The apparatus of claim 22, wherein the plurality of blades are spaced about the perimeter of the second roll at a spacing of at least five blades per inch.

24. (New) An apparatus for producing discontinuous lengths of filament, comprising:
- a rotatable first roll having a first severing structure;
 - a rotatable second roll having a second severing structure, the second severing structure corresponding with the first severing structure for severing a length of the filament positioned between the rolls;
 - a drive system operable to independently rotate the first roll and the second roll and to position the first roll and the second roll at a desired radial spacing with respect to each other according to a drive command;
 - a sensor system operable to make measurements and generate current state signals representative of at least one actual current roll property of the first roll, at least one actual current roll property of the second roll, and an actual current radial spacing between the first roll and the second roll; and
 - a control system for receiving the current state signals that is operable to generate the drive command in accordance with predetermined control parameters and based on the at least one actual current roll property of the first roll, the at least one actual current roll property of the second roll, and the actual current radial spacing, wherein the drive command synchronizes the at least one actual current roll properties of the first roll and the second roll and wherein the drive command radially positions the first roll and the second roll.
25. (New) The apparatus of claim 24, wherein the first severing structure comprises a plurality of slots spaced apart about a perimeter of the first roll, and the second severing structure comprises a plurality of elongated structures extending from and spaced apart about a perimeter of the second roll.

26. (New) The apparatus of claim 25, wherein the plurality of slots extend longitudinally along the perimeter of the first roll and the plurality of elongated structures include a plurality of cutting blades extending longitudinally along the perimeter of the second roll.

27. (New) The apparatus of claim 26, wherein the plurality of blades are spaced about the perimeter of the second roll at a spacing of at least five blades per inch.

28. (New) The apparatus of claim 24, wherein the at least one actual current roll property of the first roll comprises the rotational position of the first roll and wherein the at least one actual current roll property of the second roll comprises the rotational position of the second roll.

29. (New) The apparatus of claim 24, wherein the control system is operable to determine roll error signals corresponding to a difference between the actual current roll properties of the first roll and second roll and a desired roll property of the first roll and second roll, respectively, and wherein the control parameters utilize the roll error signals and the current state signals to calculate and determine the drive command.

30. (New) The apparatus of claim 24, wherein the control system is operable to generate the drive command based on a radial spacing error signal corresponding to a difference between the current radial spacing and a desired radial spacing.

31. (New) The apparatus of claim 24, wherein the drive command comprises a first roll drive command and a second roll drive command, wherein the first roll drive command is based on the at least one actual current roll property of the first roll and the second roll drive command is based on the at least one actual current roll property of the second roll.

32. (New) The apparatus of claim 24, wherein the drive command comprises a first roll drive command and a second roll drive command and both the first roll drive command and the second roll drive command are based on the at least one actual current roll property of the first roll.

33. (New) The apparatus of claim 24, wherein the drive command comprises a first roll drive command and a second roll drive command, wherein the first roll drive command is based on the at least one actual current roll property of the first roll, at least one desired roll property of the first roll corresponding to the at least one actual current roll property of the first roll, and a system drive command based on a velocity of the filament between the first roll and the second roll, and wherein the second roll drive command is based on the at least one actual current roll property of the first roll, the at least one actual current roll property of the second roll, and at least one desired roll property of the second roll corresponding to the at least one actual current roll property of the second roll.

34. (New) The apparatus of claim 33, wherein the at least one desired roll property of the first roll and the at least one desired roll property of the second roll correspond to the synchronized positioning of the first severing structure of the first roll and the second severing structure of the second roll.

35. (New) The apparatus of claim 24, wherein the control system is operable to generate the drive command based on a radial spacing error signal corresponding to a difference between the current radial spacing and a desired radial spacing.